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Effect of Training Programs on the Promotion of Pediculosis Preventive Behaviors in Mothers

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Background & Aims of the Study: Infestation of humans by lice has a long history and is still recognized as a recurring disease and a global health problem. In this regard, mothers, as the backbone of the family, play a peculiar role in children's health. The present study aimed to determine the effect of education on the promotion of pediculosis preventive behaviors in mothers of female primary school students.

Materials and Methods: The current study was conducted using interventional design and multi-stage random sampling method in collaboration with 176 mothers of female primary school students in Qom in the academic year of 2018-2019. The data collection tool was a valid and reliable researcher-made questionnaire comprising of three sections: demographic information, awareness questions, and preventive behavior questionnaire. The educational intervention for mothers in the test group was held in four 90-minute sessions for 2 weeks. After 3 months, the post-test questionnaires were completed again. The obtained data were analyzed in SPSS software (version 16). A p-value less than 0.05 was considered statistically significance.

Results: The results of statistical tests demonstrated no statistically significant difference between the test and control groups in terms of demographic variables ($P<0.05$). There was a significant difference between the mean score of preventive behavior in the test group before and 3 months after the intervention ($P<0.001$). On the other hand, no significant difference was observed in the control group before and after the intervention ($P= 0.66$). There was a significant difference between the mean score of awareness in the test group before and 3 months after the educational intervention ($P<0.001$). Moreover, the mean difference between the awareness score and preventive behavior between the test group and the control showed a significant difference ($P <0.001$).

Conclusion: As evidenced by the obtained results, maternal education can increase the level of awareness and promote pediculosis preventive behaviors. Therefore, mothers' participation in educational programs in schools and comprehensive health centers can help change people's pediculosis preventive behaviors.

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Background

Louse as the most common external parasite of infection in humans has a long history (1) and is still recognized as a recurring disease and a global health problem (2). Head lice are divided into three categories in terms of medical importance: head lice, body lice, and pubic lice (3). In scientific sources, severe head,

body, and pubic infections are defined as pediculosis (4). Although this disease is detected in both girls and boys, it is more common in girls. Recent studies have indicated that more than 12 million girls, especially those within the age range of 1-11, are infected with head lice (5).

Although the prevalence of this disease is not limited to any specific age group, primary school students are the most vulnerable age group with high levels of infection (6). Head lice can cause direct problems, such as itching, scratching, and skin irritation. Moreover, it can result in social problems, insomnia, mental irritation, academic failure, depression, anemia, cervical adenopathy, bacterial infections, and allergic reactions (7). The International Association of Pediculosis of the United States defines the incidence of over 5% head lice as an epidemic (8).

According to extensive studies, we are witnessing an increase in the prevalence of head lice in different parts of the world and Iran in recent years. It has imposed heavy financial burdens upon the health care system (9, 10). Studies conducted abroad have reported the prevalence of head lice infestation in primary school students as variable, with the prevalence reported to be between 40-60% (11-13). The prevalence of infestation in different regions of Iran has been in the range of 6-30%. For instance, the prevalence rates of head lice in Sistan and Baluchestan, Hormozgan, Fars, Ahvaz, Kermanshah, and Qom are estimated at 27%, 23.4%, 20.5%, 11%, 8%, and 7.6% (14, 15).

The promotion of public health, public awareness-raising, improvement of economic and social situation, as well as timely diagnosis and treatment of infected cases perform a peculiar role in controlling this disease (16). In this regard, although schools have great potential for heavy infestation with lice, they are the most suitable places for teaching hygiene issues (17). Mothers as one of the main backbones of teaching hygiene issues and promoting family health can provide children with valuable information.

Therefore, an increase in mothers' awareness can be very effective in the prevention of pediculosis. Moreover, mothers' disregard for the prevention and treatment of lice infestation may endangers the health of their children, as well as other students and their families. On the other hand, girls in primary school are not able to perform pediculosis preventive behaviors properly. Therefore, mothers should be more involved in solving this problem by the diagnosis and identification of infestation sources.

Researchers in a study conducted by Al-Maghribi et al. in Egypt have found that students are aware of high-risk behaviors that affect head lice infestation; nonetheless, they cannot avoid them (18). Therefore, the prevention of pediculosis in female students should be performed by mothers' encouragement and their direct participation in care through education.

In their study, Goodarzvand Chegini et al. found that educating mothers about the prevention of pediculosis could improve their behavior and reduce the incidence of pediculosis in their daughters (19). Mothers' pediculosis preventive behaviors are of utmost importance in the control and prevention of its complications in students; moreover, there is a paucity of studies on this issue. With this background in mind, the present study was carried out to determine the effect of education on the promotion of pediculosis preventive behaviors in mothers of female elementary school students.

Materials & Methods

The current study was conducted using interventional design and multi-stage random sampling method in collaboration with 176 mothers of female primary school students in Qom in the academic year of 2018-2019 in two groups of test and control (88 people in each

group). To perform this study, a multi-stage random sampling method was used. The sample was obtained as 55 cases in each group (110 cases in total) using the following formula:

$$n = \frac{(Z_1 + Z_2)^2 (S_1^2 + S_2^2)}{d^2} = 55$$

where Z1 is the reliability coefficient of 0.95 calculated at1.96.

Z2 is the test power of 0.80 obtained at 0.84.

S1and S2 are the estimates of the standard deviation of the performance score with a maximum score of 19.

d is the minimum change difference in the mean score between each of the two groups demonstrating a significant difference which is considered 10.

However, considering sample attrition, 60 people in each group, and a total of 120 cases were determined. Later, due to the interest of 88 eligible mothers in each group, a total of 176 people entered the study.

The code of ethics (IR.MUQ.REC.1396.133) was obtained from Qom University of Medical Sciences. After making the necessary coordination with the Department of Education, one of the four districts of Qom was randomly selected. Subsequently, among girls' primary schools in the selected area, two economically and culturally similar schools located in an acceptable distance were randomly selected as the schools of the test and control groups.

First, the hair of all the students in both schools was examined for pediculosis; thereafter, the mothers of all students who were not affected by pediculosis were invited to participate in the research. In order to observe the ethical principles, before completing the questionnaires, research participants were provided with the research objectives and assured of the confidentiality of their information. A written consent was then obtained from the participants.

The inclusion criteria entailed: 1) Iranian nationality, 2) residency in Qom, 3) basic literacy, 4) interest to participate in the study. On the other hand, the exclusion criterion was absence in training program for more than one session. Due to the absence of a standard questionnaire in this field, the study questionnaire was designed by the research team after extensive research and preparation of a question bank using existing resources and in the form of research objectives.

Thereafter, in order to review and confirm the face and content validity of this tool, it was examined by a panel of experts (7 faculty members and professors of Health Education, Public Health and Epidemiology departments) and their opinions were included in the questionnaire. Moreover, in order to measure reliability, the external reliability of the questions was calculated using test-retest method in the pilot study conducted on 30 mothers who were similar to the intended samples (other than the studied samples) with 2 weeks interval. The correlation coefficient scores of awareness and preventive behavior were reported as r= 0.91 and r = 0.81, respectively.

In addition, the internal consistency score of awareness and preventive behavior were obtained at 0.93 and 0.90, respectively, using Cronbach's alpha coefficient method. The questionnaire consisted of 33 questions, including 11 demographic, 11 awareness, and 11 pediculosis preventive behavior questions. Awareness questions were scored on a 3-point scale: 2(correct answer), 1(I don’t know) , and 0 (the wrong answer). The achievable range of awareness score was 0-22. The behavior questionnaire had two options: yes, I do (1) and no, I don't do (0). The minimum and maximum scores obtained in this section were 0-11. Thereafter, 88 mothers in the training group received the training program held in four 90-minute sessions in the form of lectures, group discussions, and practical demonstrations using PowerPoint, educational pictures and videos, and educational pamphlets over a period of 2

weeks.

Educational content included familiarity with the importance of skin and hair hygiene, general characteristics of pediculosis, lice-transmitted diseases, the proper examinations, control of hair, proper way of washing and ironing clothes, benefits of using fine-tooth combs and a personal bag at school, proper way of cleaning washable and non-washable lice-infested item, cleaning the house from lice, use of Permethrin shampoo and Dimethicone lotion, making vinegar solution, the proper way of nit removal, the physical and psychological effects of pediculosis, the importance of early examination and diagnosis and timely treatment of people with this disease. At the end of the last training session, mothers in the test group received a booklet containing the latest national guidelines for pediculosis care and educational pamphlets.

The control group did not receive any educational intervention during the training period. 3 months after the last training session, the questionnaire was re-completed by mothers in both groups, and all the educational content used for the study was made available to the control group. After completing the questionnaires, the data were described by descriptive indicators, such as mean and standard deviation and analyzed in SPSS software (version 16) using Chi-Square, McNemar, Man Whitney, T-independent, T-pair statistical tests. A p-value less than 0.05 was considered statistically significant.

Results

The mean age scores of mothers in the test group and control group were reported as 35.8±5.27 and 36.02 ± 5.7. There was no statistically significant difference between the test and control group in terms of age (P=0.079). In the test group, 76(86.4%) mothers were housewife and 12 (13.6%) cases were employed. In the control group, 74 (84.1%) mothers were housewife and 14 (15.9%) cases were employed. chi-square test did not show any significant differences in this regard (P=0.41).

The results of the statistical tests demonstrated no statistically significant difference between the test and control groups in terms of demographic variables (P<0.05) (Table 1).

Table 1) Comparative study of the demographic variables of the mothers under study between the test and control groups

Variable		Test group		Control group		Significance level(0.05)
		Frequency	Percentage	Frequency	Percentage	
Mother's education	Primary school	19	21.6	20	22.7	P=0.79
	Junior high school	16	18.2	14	15.9	
	High school	33	37.5	31	35.2	
	Academic	20	22.7	23		
Mother's occupation	Employed	12	13.6	14	15.9	P=0.41
	Housewife	76	86.4	74	84.1	
Spouse's education	Illiterate	2	2.2	1	1.1	P=0.56
	Primary school	8	9.1	6	6.9	
	Junior high school	11	12.5	12	13.6	
	High school	39	44.3	38	43.2	
	Academic	28	31.9	31	35.2	

Table 1 Continued.

Spouse's occupation	Freelancer	53	60.2	48	54.6	P=0.48
	Employee	26	29.5	30	34	
	Retired	6	6.9	8	9.1	
	Other	3	3.4	2	2.3	
Number of children	One	18	20.5	26	29.5	P=0.49
	two	41	46.4	32	36.4	
	Three	25	28.5	27	30.7	
	Four	4	4.5	3	3.4	
Grade	1sth	25	28.4	26	29.5	P=0.84
	2nd	24	27.3	25	28.4	
	3rd	13	14.8	12	13.6	
	4th	11	12.5	10	11.4	
	5th	9	10.2	8	9.1	
	6th	6	6.8	7	8	
A history of head lice among family members	Yes	40	45.5	39	44.3	P=0.5
	No	48	54.5	49	55.7	
History of mother's education about head lice	Yes	32	36.4	33	37.5	P=0.87
	No	56	63.6	55	62.5	
The most important source of information on head lice	Television and radio	10	11.3	19	21.6	P=0.25
	Newspaper, magazine, book	12	13.7	17	19.3	
	Family and acquaintances	30	34.1	27	30.7	
	Posters and pamphlets	7	8	6	6.8	
	Health care workers in comprehensive health centers and schools	29	33	19	21.6	
The preferred source for head lice information	Television and radio	5	5.7	13	14.8	P=0.22
	Newspaper, magazine, book	10	11.4	14	15.9	
	Family and acquaintances	4	4.5	5	5.7	
	Posters and pamphlets	2	2.3	2	2.3	
	Health care workers in comprehensive health centers and schools	67	76.1	54	61.4	

The results showed that there was a significant difference between the mean score of awareness in the test group before and 3 months after the educational intervention (P<0.001). Nevertheless, no significant difference was observed in the control group before and after the intervention (P=0.35). Furthermore, a significant difference was detected between the mean behavior score in the test group before and 3 months after the educational intervention (P <0.001). On the other hand, no significant difference was observed in the control group before and after the intervention (P=0.66).

The findings also indicated that the difference between the mean score of awareness and behavior between the test group and the control group was significantly different (P<0.001) (Table 2).

None of the mothers who participated in the study used a personal bag to put their children's clothes at school to prevent pediculosis before the intervention. Nonetheless, after the intervention, the rate of using a personal bag in the test group reached 100% (Table 3).

Table 2) Comparison of mean and standard deviation of awareness and behavior scores before and after educational intervention in two groups of test and control

Variable	Group	Mean and standard deviation		Paired-t test	Mean and standard deviation of mean difference
		Before the intervention	After the intervention		
Awareness	Test	11.37±2.52	23.63±1.74	<0.001	12.26±3.60
	Control	10.65±2.51	10.85±2.86	0.35	0.19±1.94
	Independent t-test	0.06	<0.001	-	<0.001
Preventive behavior	Test	31.96±3.15	51.40±2.29	<0.001	19.02±3.23
	Control	32.43±3.18	32.20±3.18	0.66	0.02±1.90
	Independent t-tset	0.35	<0.001	-	<0.001

Table 3) Percentage of pediculosis preventive behaviors of the two groups of test and control before and after training intervention

Variable	Group	Frequency (percentage) before the intervention		Frequency (percentage) after the intervention		Significance level
		Yes	No	Yes	No	
Cutting and trimming hair	Test	(29.5) 26	(70.5) 62	(94.3) 83	(5.7) 5	<0.001
	Control	(31.8) 28	(68.2) 60	(34.1) 30	(65.9) 58	0.18
	Significance level	0.75		<0.001		-
Use of personal items	Test	(59.1) 52	(40.9) 36	(100) 88	(0) 0	<0.001
	Control	(59.1) 52	(40.9) 36	(65.9) 58	(34.1) 30	0.54
	Significance level	0.76		<0.001		-
Avoiding direct contact with lice-infested people	Test	(38.6) 34	() 54	(98.9) 87	(1.1) 1	<0.001
	Control	(40.9) 36	(59.1) 52	(36.3) 32	(63.7) 56	0.2
	Significance level	0.63		<0.001		-
visiting your doctor or comprehensive health center in the case of suspicious symptoms	Test	(36.2) 31	(64.8) 57	(97.7) 86	(2.8) 2	<0.001
	Control	(44.3) 39	(55.7) 49	(38.6) 34	(61.4) 54	0.21
	Significance level	0.62		<0.001		-
Washing clothes with a washing machine	Test	(93.2) 82	(6.8) 6	(98.9) 87	(1.1) 1	<0.001
	Control	(85.2) 75	(14.8) 13	(85.2) 75	(14.8) 13	0.59
	Significance level	0.54		<0.001		-

Table 3 Continued.

Ironing clothes regularly	Test	(95.5) 84	(4.5) 4	(100) 80	(0) 0	<0.001
	Control	(95.5) 84	(4.5) 4	(95.4) 84	(4.6) 4	0.12
	Significance level	0.98		<0.001		-
Bathe regularly at least twice a week	Test	(92) 81	(8) 7	(100)88	(0) 0	<0.001
	Control	(92) 81	(9) 8	(93.2) 82	(6.8) 6	0.24
	Significance level	0.74		<0.001		-
Regular change of clothes	Test	(98.9) 87	(1.1) 1	(100) 88	(0) 0	<0.001
	Control	(93.2) 82	(6.8) 6	(93.2) 82		0.1
	Significance level	0.43		<0.001		-
Owing a personal bag for puuting clothes	Test	(0) 0	(100) 88	(100) 88	(0) 0	<0.001
	Control	(0) 0	(100) 88	(6.8) 6	(93.2) 82	<0.001
	Significance level	0.73		<0.001		-
Regular hair-combing	Test	(98.9) 87	(1.1) 1	(100) 88	(0) 0	<0.001
	Control	(97.7) 86	()2	(97.7) 86	(0.3) 2	0.98
	Significance level	0.78		<0.001		-
Use of fine-tooth come	Test	(0) 0	(100) 88	(97.7) 86	(2.3) 2	<0.001
	Control	(0) 0	(100) 88	(0) 0	(100) 88	0.10
	Significance level	0.84		<0.001		-

Discussion

The present study was conducted to determine the effect of training program on the promotion of pediculosis preventive behaviors in mothers of female elementary school students in Qom. The obtained results pointed to a significant increase in the mean awareness score in the test group after the educational intervention, compared to the control group. The findings of a study conducted by Gholami et al. confirmed this result. In a similar vein, a study performed by Meshki et al. revealed that training on pediculosis preventive behaviors could play a peculiar role in the prevention and control of head lice, and raising awareness could improve this preventive behavior (21).

Along the same lines, Nehal et al. suggested that an increase in mothers' awareness of head lice by implementing educational programs, periodic examinations and group treatment of lice-infested people promote pediculosis preventive behaviors, which in turn, reduce head lice infestation rate (22). Consequently, the study found that an increase in mothers' awareness and their cooperation with schools increases the sensitivity toward this issue and preventive behaviors. Therefore, education has been effective in raising the level of awareness in mothers and has caused mothers to consider their children at risk for head lice.

As illustrated by the results of the present study, 3 months after the educational intervention, the mean score of behavior in the experimental group significantly increased, compared to before the intervention, while no significant difference was observed in the control group. Furthermore, there was no significant difference between the two groups regarding the mean score before the educational intervention. Nevertrheless, a significant difference was observed between the two groups after the intervention.

The results point to the effect of education on mothers' behavior and the improvement in preventive behavior. The results of the current study are consistent with a global study conducted by Eftekhar et al. (23). The pictures and videos of pediculosis infestation, head lice

blood sucking and feeding on the head of infested people and its movement made mothers realize the severity and seriousness of the complications of pediculosis and its adverse consequences.

Therefore, they acknowledged the severity of the threat and numerous physical, psychological, and social consequences of pediculosis; consequently, they seriously implemented preventive measures. In this regard, practical demonstration method was used to teach pediculosis preventive behaviors in the experimental group. In their study, Yingklang et al. indicated that behavior score of the test group significantly increased 2 months after the training intervention, compared to the control group. Moreover, it was found that hygiene training improved pediculosis preventive behavior.

It should be noted that the researchers used lecture methods, group discussions, and practical demonstrations for the pediculosis prevention training process (24). In the study carried out by Goodarzvand Chegini et al., the rate of behavior in the test group significantly increased after the educational intervention. It pointed to the positive effect of educational intervention on mothers and improved pediculosis preventive behavior (19). In their study, Babazadeh et al. stated that educational intervention has been effective in the promotion of pediculosis preventive behaviors in female elementary school students (25).

Regarding haircutting behavior, most mothers and their husbands were reluctant to cut their daughter's hair before the intervention. They thought that it had no effect on the prevention of pediculosis and considered hair to be an important indicator of their daughter's beauty. Various studies have suggested that participation in group work supports and encourages mothers to improve their health and behavioral behaviors (26). Therefore, mothers 'involvement in the education process and their support changed mothers' views on haircutting intervention.

Therefore, they recognized that regular haircuts can make it easier for them to prevent and even treat lice. The results of a study carried out by Karaaslan et al. Confirm this finding (27). Before the intervention, many mothers preferred not to visit a doctor or a comprehensive health center in the case of suspicious symptoms and treat the disease secretly. They stated that they were embarrassed to visit the doctor or comprehensive health centers. The involvement in group discussion and provision of opportunities to express experiences, beliefs, feelings, and concerns about illnesses, mothers were engaged in solving this problem. Accordingly, they could deal with this hygiene problem, their feeling of shame reduces, and they seek preventive behaviors (28).

After the intervention, mothers came to the conclusion that the comprehensive health centers and schools perform a key role in the prevention of diseases and protection of public health so that the promotion of health indicators owe to their activities. Hygiene education provided by healthcare workers is one of the effective factors for the change and modification of individual and social habits and behaviors, in other words, the improvement in individual lifestyle in relation to the health of all family members.

In this regard, the role of preventive behavior is of paramount importance in education. Healthcare providers can empower mothers by providing them with training appropriate to their needs and level of understanding and support them in performing hygiene behaviors. Prior to the intervention, none of the mothers in the study used a personal bag to put their children's clothes at school or a fine-tooth comb to prevent pediculosis. Nonetheless, after the intervention, these preventive behaviors significantly improved in the test group.

The findings suggest that mothers did not know much about the use of fine-tooth combs and their benefits before the procedure.

Moreover, they did not pay much attention to the use of a personal bag and fine-tooth combs to prevent disease. This disregard was due to the unimportance of implementing simple steps to prevent the disease. Mothers' participation in education led to the exchange of information, understanding of complex issues, making the most appropriate decisions and strategies, and learning more. Moreover, the use of personal items, frequent hair combing, regular change of clothes, and regular bathing improved after the intervention, compared to before the intervention.

In a study carried out by Maleki et al., hair lice infestation was significantly correlated with using personal items, combing hair, regular change of clothes, and bathing regularly at least twice a week. Researchers in the mentioned study focused on teaching pediculosis preventive methods to parents and students in order to change behavior (29). The strengths of the research can be traced to the design of a written curriculum for mothers in the field of pediculosis preventive behaviors.

On the other hand, the results of the study were based on mothers' reports on pediculosis preventive measures and the provided information may not have been accurate enough. Furthermore, given the time period of the research based on measures of research-related organizations (Department of Education or health centers), both groups may be faced with educational programs related to pediculosis. These two are the most important limitations of the present study.

Conclusion

As evidenced by the obtained results, maternal education can improve awareness and pediculosis preventive behaviors. Therefore, mothers' involvement in the implementation of educational programs in schools and comprehensive health centers can be effective in changing people's performance in the prevention of pediculosis.

Footnotes

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Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of the current article.

References

1. Tagka A, Lambrou GI, Braoudaki M, Panagiotopoulos T, Papanikolaou E, Laggas D. Socioeconomical factors associated with pediculosis (Phthiraptera: Pediculidae) in Athens, Greece. J Med Entomol 2016;53(4):919-22. PMID: 27134208
2. Ahmad Nasrollahi S, Daneshmand B, Kashani N. Review of common head lice treatments. Tehran, Iran. J Dermatol Cosmetic 2018;9(3):219-25. (In Persian) Link
3. Moradiasl E, Habibzadeh S, Rafinejad J, Abazari M, Ahari SS, Saghafipour A, et al. Risk factors associated with head lice (pediculosis) infestation among elementary school students in Meshkinshahr County, North West of Iran. Int J Pediatr 2018;6(3):7383-92. Link
4. Karami Jooshin M, Izanloo H, Saghafipour A, Ghafoori Y. Study on efficacy of 1% permethrin

shampoo and 4% dimethicone lotion as pediculicide products used in Iran: a clinical trial. Tehran Univ Med J 2019;77(1):41-6. (In Persian) Link
5. Coscione S, Esau T, Kekeubata E, Diau J, Asugeni R, MacLaren D, et al. Impact of ivermectin administered for scabies treatment on the prevalence of head lice in Atoifi, Solomon Islands. PLoS Negl Trop Dis 2018;12(9):e0006825. PMID: 30252856
6. Boumbanda Koyo CS, Amanzougaghene N, Davoust B, Tshilolo L, Lekana-Douki JB, Raoult D, et al. Genetic diversity of human head lice and molecular detection of associated bacterial pathogens in Democratic Republic of Congo. Parasit Vectors 2019;12(1):290. PMID: 31174587
7. Greive KA, Barnes TM. The efficacy of Australian essential oils for the treatment of head lice infestation in children: a randomised controlled trial. Australas J Dermatol 2018;59(2):99-105. PMID: 28266704
8. Lesshafft H, Baier A, Guerra H, Terashima A, Feldmeier H. Prevalence and risk factors associated with pediculosis capitis in an impoverished urban community in Lima, Peru. J Glob Infect Dis 2013;5(4):138-43. PMID: 24672174
9. Firoozfar F, Moosa-Kazemi SH, Bahrami A, Yusuf MA, Saghafipour A, Armoon Z, et al. Head lice infestation (*Pediculus humanus capitis*) prevalence and its associated factors, among the Kormanj Tribes in north khorasan province. Shiraz E Med J 2019;20(4):e80292. Link
10. Dagne H, Biya AA, Tirfie A, Yallew WW, Dagnew B. Prevalence of pediculosis capitis and associated factors among schoolchildren in Woreta town, northwest Ethiopia. BMC Res Notes 2019;12(1):465. PMID: 31362792
11. AL Bashtawy M, Hasna F. Pediculosis capitis among primary-school children in Mafraq Governorate, Jordan. East Mediterr Health J 2012;18(1):43-8. PMID: 22360010
12. Aysel Ozdemir RN, Eda Unal RN, Leman Ceki RN. The prevalence of pediculus capitis and personal hygiene status in two vocational high schools. Int J Caring Sci 2019;12(2):1-8. Link
13. Manrique-Saide P, Pavía-Ruz N, Rodríguez-Buenfil JC, Herrera Herrera R, Gómez-Ruiz P, Pilger D. Prevalence of pediculosis capitis in children from a rural school in Yucatan, Mexico. Rev Inst Med Trop Sao Paulo 2011;53(6):325-7. PMID: 22183456
14. Jarahi L, Orouji R, Vahed S, Mosa Farkhani E. Assessment of demographic caracteractists and related factor on head lice in Mashhad, a population based study. Med J Mashhad Univ Med Sci 2017;59(6):305-11. (In Persian) Link
15. Moradi A, Bathayi J, Shojaeyan M, Neshni A, Rahimi M, Mostafavi A. Outbreak of pediculosis capitis in students of Bahar in Hamedan province. Dermatol Cosmet 2013;3(1):26-32. (In Persian) Link
16. Davarpanah MA, Kazerouni AR, Rahmati H, Neirami RN, Bakhtiary H, Sadeghi M. The prevalence of pediculus capitis among the middle schoolchildren in Fars Province, southern Iran. Caspian J Intern Med 2013;4(1):607-10. PMID: 24009945
17. Chen L, Zhong B, Xu J, Li RZ, Cao CL. Health education as an important component in the National Schistosomiasis Control Programme in the people's republic of China. Adv Parasitol 2016;92:307-39. PMID: 27137451
18. El Magrabi NM, El Houfey AA, Mahmoud SR. Screening for prevalence and associated risk factors of head lice among primary school student in Assiut City. Adv Environ Biol 2015;9(8):87-95. Link
19. Chegini PG, Anoosheh M, Kazemnejad A. The effectiveness of educating mothers on preventive behaviors of pediculosis on morbidity rate of their daughters. Payesh 2017;16(6):785-95. (In Persian) Link
20. Gholamnia Shirvani Z, Shokravi F, Ardestani M. Effect of designed health education program on knowledge, attitude, practice and the rate *Pediculosis Capitis* in female primary school students in Chabahar city. J Sharekord Univ Med Sci 2011;13(3):25-35. (In Persian) Link
21. Moshki M, Mojadam M, Alavijeh FZ. Preventive behaviors of female elementary students in regard to pediculosis infestation based on health belief model (HBM). J Health Dev 2014;3(3):269-81. (In Persian) Link
22. Allam NA, Al Megrin WA, Alkeridis LA. Faye Abdellah model to banishing social stigma of head lice among school students. Sci J Clin Med 2016;5(1):1. Link
23. Peyman N. Effect of educational intervention based on protection motivation theory on promoting pediculosis preventive behaviors among elementary school girls in Neyshabur. J Educ Community Health 2018;5(2):1-7. (In Persian) Link
24. Yingklang M, Sengthong C, Haonon O, Dangtakot R, Pinlaor P, Sota C, et al. Effect of a health education program on reduction of pediculosis in school girls at Amphoe Muang, Khon Kaen Province, Thailand. PLoS One 2018;13(6):e0198599. PMID: 29889851
25. Babazadeh T, Kouzekanani K, Oliaei S, Gaffari-Fam S, Abbasabad GD, Maleki Chollou K, et al. Assessing the link between head lice infestation and selected cognitive-behavioral factors in a sample of Iranian female adolescents. Heliyon 2020;6(5):e03959. PMID: 32514477
26. Aghapour SA, Vakili MA, Karbasi M, Badeli R. Comparison the effect of student-based group discussion and lecture methods teaching on midwifery student's learning level. Educ Strateg Med

Sci 2015;8(5):281-6. (In Persian) Link
27. Karaaslan S, Yılmaz H. The distribution of pediculus humanus capitis among primary school pupils of the Turkish chamber of commerce and stock exchange organisation in van. Turkiye Parazitol Derg 2015;39(1):27-32. PMID: 25917581
28. Asgari F, KhoshNazar T, Sedighi A. Comparison of efficiency management training using lecturing and small group teaching on learning rate of Nursing and Midwifery student's. J Holist Nurs Midwifery 2015;25(1):26-34. (In Persian) Link
29. Yazdani-Charati J, Abdollahi F. The prevalence of pediculosis capitis and its associated risk factors in primary school students in Kalaleh, Iran in 2015. J Health Res Community 2016;2(3):23-31. (In Persian) Link